REQUEST FOR PROPOSALS

Development of a wadable stream classification system for New Hampshire

Introduction:

Since 1997 DES has collected biological information from wadable streams. Specifically, the DES biomonitoring unit utilizes benthic macroinvertebrates to assess the biological integrity of these waterbodies. In 2003, DES worked to develop a multi-metric index to characterize the structure and function of macroinvertebrate communities. As part of this development process, two primary ecological regions were identified based on the composition of macroinvertebrate communities from reference sites. Index thresholds were subsequently defined for each ecological region.

Project Description:

While DES is confident the identified ecological regions provide a basic level of classification, we intend to explore a refinement of the system in order fully comprehend the natural distribution of distinct macroinvertebrate communities. In addition, we hope to identify the environmental variables that control this natural distribution and their relative importance. Finally, DES would like to understand if ecoregional classification systems are more or less accurate in predicting where distinct macroinvertebrate communities exist than a single or a suite of environmental variables.

Once the classification system is further refined, DES will re-evaluate its multi-metric index and make the necessary adjustments.

As part of the refinement of its current classification system the primary questions to be answered are:

1) *Are there distinct, reference-quality macroinvertebrate communities that can be identified across the state?*

2) *If distinct communities exist, do they correspond to an ecoregional classification scheme?*

3) *Or, are specific local or watershed scale enivironmental variables more important in structuring the macroinvertebrate community?*

To answer these questions, DES wishes to enter into a contract with a qualified firm capable of completing the necessary multivariate statistical analyses to answer the questions above and produce a predictive model. As part of this contract, DES will supply the necessary biological and environmental data.

The contractor will be expected to use similarity-based classification techniques to identify macroinvertebrate community groupings. In addition, the contractor will be expected to identify a suite of indicator taxa associated with each macroinvertebrate community. The contractor will also be expected to re-examine linkages between community types and various ecoregional classification systems. Finally, the contractor will simultaneously analyze macroinvertebrate data with up to 20 environmental variables to determine the importance of these variables in predicting macroinvertebrate community composition through analyses such as discriminant analysis and canonical correspondence analysis.

Deliverables:

The specific deliverables for the project are as follows:

1) Tabular, graphical, and written results necessary to detail the statistical procedures utilized and their relative success at identifying macroinvertebrate community types and the associated suite of indicator taxa.

2) Tabular, graphical, and written results necessary to detail the statistical procedures utilized in testing the importance of ecoregional classification systems and their level of correspondence with the community types identified above.

3) Tabular, graphical, and written results necessary to detail the statistical procedures utilized in identifying environmental variables important in predicting community types and their relative importance.

4) A multivariate model to predict areas where distinct macroinvertebrate communities are expected to exist.

5) Recommendation of the most accurate and precise classification system for the purposes of recalibration of DES' multi-metric index.

6) Detailed log of all statistical analysis procedures, data manipulation, and result files.

A single final report that satisfies items 1 – 5 above is acceptable (item 6 can be included as an appendix).

Schedule of Project:

DES anticipates collecting the remainder of the field data during summer 2006 and to complete data extraction shortly thereafter. Data transfer and analyses should be completed during fall 2006 and winter 2007. DES hopes to have the project completed in its entirety by June 30, 2007.

Budget:

The project budget should be based on the deliverables outlined above. Perspective contractors need only submit a single proposed cost for the project that includes a detailed list and description of the services to be provided. Proposals should be postmarked no later than **June 2, 2006** and mailed directly to **David Neils, NH DES Biomonitoring Program, 29 Hazen Drive, Concord, NH 03301**. Questions about the RFP or proposal development prior to June 2nd can be addressed either by phone [(603) 271-8865] or email (dneils@des.state.nh.us).